Exploring the built environment, physical activity and related behaviours of young people attending school, college and those not in employment

Environment and physical activity of young people

Lake A. A. and Townshend T.G.

Dr Amelia A Lake

Centre for Public Policy & Health, School of Medicine & Health, Wolfson Research Institute, Durham University, Queen's Campus, Thornaby, Stockton-on-Tees, TS17 6BH, UK. +44 (0) 191 334 0668. Amelia.Lake@durham.ac.uk (corresponding author)

Mr Tim G Townshend

Global Urban Research Unit, School of Architecture Planning and Landscape, Newcastle University, Newcastle-upon-Tyne, NE1 7RU, UK. +44 (0) 191 222 7814.

Tim.Townshend@ncl.ac.uk

Abstract

Background: Evidence suggests that environments impact behaviour, including physical activity (PA). The aim was to understand *where* young people are PA and the environmental contexts to their activity. To explore how they perceived both barriers to, and enablers for, PA in their environment.

Methods: Focus groups were conducted with five groups aged 16 – 20 years (n=42; 29 male, 13 female) in Newcastle-upon-Tyne, England between November 2006 and June 2007. Analysis was an iterative process of looking for broad themes and subthemes across the transcripts.

Results: Themes explored included their main environment; perceptions of their environment; PA and where they are active; activity in the past; and safety concerns. Emergent themes included working and PA, transport and activity, limitations of the environment to PA and gender differences. Our results suggest PA was distributed across a range of environments, rather than focussed in one locale, or setting.

Conclusions: Obesity in young people is a major concern and prevention of obesity a high priority. Little is known about the PA behaviours of this age group and the context of these behaviours during this period of transition. Understanding lifestyle behaviours such as PA and context of activity is an important first step in development interventions to encourage greater activity in this transitory age-group.

Keywords

young people; obesity; obesogenic environments; physical activity; perceptions; transitions

Introduction

There is increasing evidence that the built environments in which we live impact our behaviour, including our propensity to undertake physical activity (1-3). Dense, pedestrian friendly neighbourhoods, with well-connected street networks have been associated with increased walking in the US, Australia and mainland Europe (4-7). The sample within this paper crosses the boundaries of adolescence (10-17 years) and that of emerging adulthood, the transition to adulthood (18-25 years) (8, 9). For the purpose of this paper the sample will be described as young people; however literature reviewed will cover both adolescents and emerging adulthood. Compared to other age groups, little is known about how the physical activity of young people is influenced by the physical environments in which they operate (10, 11). Although many young people are not fully autonomous and therefore their environment may influence them to a greater extent than adults (12) this is also an important and life shaping period with growing independence from the influence of parents/carers (13). It is also a period when young people learn to drive and therefore it becomes a 'key transition point' for transport behaviour. This may set up reliance on vehicular transport and away from active transportation modes (walking and cycling) into adulthood (14). While this topic has been explored in younger children (15), this older age-group requires investigation. There is an urgent need to understand the lifestyle behaviours contributing to the development of obesity in the period of transition from adolescence to adulthood (16, 17).

National statistics suggest a worrying trend of increasing overweight and obesity in England (18). This research focuses on a population of young people (16 - 20 year olds) where incidence of overweight and obesity is of great concern and the health consequences are high. Rates of overweight and obesity in 16–24 year olds are over 35% for males and 40% for females (18). Obesity, once developed, is difficult to treat, and prevention programmes aimed at young people are considered a high priority (19). Obesity early in life is strongly associated with obesity in adulthood (20). In addition to Body Mass Index (BMI), physical activity and inactivity track into adulthood (21). A systematic review of built and biophysical environmental variables associated with obesity reported that in adolescents, access to equipment and facilities, neighbourhood pattern and urban sprawl were associated with obesity outcomes (22).

While measures of physical activity and inactivity exist, fewer studies explore the context of activity or try to understand the barriers and enablers to being more physically active (23). Urban designers use terms such as 'opportunities' and 'constraints' in relation to the built environment, suggesting that a combination of physical properties and spatial configurations can facilitate certain human behaviours; this has further resonance with the long established concept of 'affordance', derived from environmental psychology (24). Affordances are those properties in the environment that are perceived to have functional significance for individuals (25); i.e. they provide opportunities or settings for certain behaviours. Affordance has been used to explore adolescents' social behaviour in their home, neighbourhood and town centre. This work has shown, for example, that these environments support different types of interaction and retreat, so for example neighbourhoods are important for close friendships whereas town centres are more important for broader social networking (26); however no equivalent work has been carried out in relation to physical activity. Moreover, despite a vast and growing number of studies which have explored the influence of the built environment on physical activity levels and obesity there are currently no known studies which specifically address 16-20 year olds in a European setting.

There are a number of studies which address adolescence (which vary in focus from 11-18 years) most of these are located in the US, or Australia and focus on objective measures of neighbourhood, for example suggesting that higher residential density and increased land-use mix (including park areas) are correlated with increased physical activity (27-30). Studies of perception of neighbourhood have produced more inconsistent findings; however studies have highlighted issues such as perceived safety (31-33) and traffic as potentially important (34).

With this exploratory work, we wanted to better understand *where* young people were physically active, how they perceived both barriers to and enablers for, physical activity in the built environment; and to explore their actual behaviours in relation to physical activity.

Methods

The recruitment strategy was to obtain a sample within the age-range of 16-18 years from a range of settings; school[1], further education (FE) colleges[2], workplace and those not in employment. To try and maintain homogeneity in terms of age group and where respondents were living, university students were not included. The study was approved by Newcastle University's ethics committee. Three schools and one college were invited to take part and Connexions[3] were contacted. Potential participants were invited to take part in the study entitled 'You and Your Space' through a brief presentation and information sheets. Respondents were given opportunities to ask further questions and informed consent was obtained.

It has been suggested that the number of focus groups necessary may be three or four (35); the aim was to conduct at least five focus groups with around 40 participants. Focus groups were conducted between November 2006 and June 2007 by two facilitators.

The focus group topics were broadly about the way respondents interact with their environment in relation to food behaviour and physical activity. This paper focuses only on the physical activity environment. A focus group topic guide was developed based on previous work (11) and reviews of the literature, covering the following : their main environment; perceptions of their environment; physical activity; safety issues; activity in the past and where they are active. However discussion encouraged the participants to scope out issues of particular interest.

Focus groups were digitally recorded, anonymised and transcribed verbatim. The transcripts were verified by a facilitator. The data was imported into the qualitative analysis software package NVivo 7 (QSR International Pty Ltd. Australia) which was used to manage the data, to log emergent themes and to develop a coding framework. The analysis was informed,

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[1] In England full-time education is compulsory for all children aged between 5 and 16 years. Students may then continue their secondary studies for a further two years (attending sixth form or college), leading most typically to A-level qualifications, although other qualifications and courses exist.

[2] In England colleges provide post-compulsory education (in addition to that received at secondary school), that is distinct from the education offered in universities (higher education). It may be at any level above compulsory education, from basic training to Higher National Diploma or Foundation Degree.

[3] Connexions is a national youth support service which provides advice, information and guidance on careers and learning for all young people aged 13 - 19 via schools, colleges and community access locations.

theoretically and procedurally, by grounded theory research (36). The analysis was an iterative process of looking for broad themes and subthemes across the transcripts; and our research framework was constructed through inductive content analysis of the data (35), as well as examining them for themes arising from previous empirical research (conducting a thorough literature review using the following databases Medline, Scopus and Web of Knowledge; resource restrictions precluded a systematic review on which to base the work) . Transcripts were read by three researchers independently and compared to establish the emergent and recurrent themes in the data; there were no significant differences or disagreements between the three separate analyses.

Focus groups have been coded according to their number and it is indicated whether the respondent was male or female, see Table I for a description of the coding.

Results

Recruitment

Accessing groups of young people in the workplace proved to be difficult; contacts were made through apprentice schemes but access to the young people via their employers was denied. Out of three schools contacted, one peri-urban[4] school agreed for us to speak with a group of their A-level[5] students. A local further education college provided access to three groups of students from two subjects (first year design and first and second year sports students. A local Connexions centre agreed to recruit young people who had left school.

Descriptives

Seven separate focus groups were conducted with five different groups of young people between the ages of 16 – 20 years (n=42; 29 male, 13 female); saturation was reached with this number of focus groups with no new themes emerging. The focus groups were conducted within the school, college and Connexions centre during school/ college time and were constrained by class time (hence for two groups (sports students) the focus group was split into two parts). Apart from one respondent who lived in student accommodation, all participants were living with at least one family member.

Focus group discussions covered a range of topics in relation to physical activity. Themes explored included their main environment; perceptions of their environment; physical activity and where they are active; activity in the past; and safety concerns. Emergent themes included working and physical activity, transport and activity, limitations of the environment to physical activity and gender differences. The latter emerged across a number of discussions; from their main environment through to their perceptions of safety. Themes are discussed under individual headings.

Their main environment

We were interested in where respondents spend most of their time, what was their 'main' environment and where they 'hung out'. There were a range of responses illustrating diversity in the groups; some described that they spent most time where they lived or where they went to college. Many referred to areas where their friend's lived. There was an

[4] Peri-urban can be defined as areas with mixed rural and urban features.

[5] The Advanced Level General Certificate of Education, (A-level), are studied over a two-year period and are recognised as the standard for assessing the suitability of applicants for academic courses in English, Welsh, and Northern Irish universities.

indication that weekday and weekend environments varied. While others described a number of different areas including where they lived and where their family lived. Only within one group, (the design students attending the city centre college), was there a distinct difference in where males and females described spending most of their time. Females described the city centre as their main venue whereas males mentioned their home neighbourhood or a friend's home neighbourhood.

Perceptions of their environment

Perceptions of their environment were interesting; for example a family-friendly, busy park within Newcastle city centre was described by a male respondent as highly dangerous and somewhere where you could get 'knived' (male FG2 Sp1). There was acknowledgement that the safety varied according to the time of day (female FG1 D). When talking about areas, neighbourhoods and perceptions of safety respondents recognised that perceptions differed, and respondents felt safe in areas they were familiar with:

> But if you have grown up in the areas that you do you don't realize how bad they are. … Like people say like if you live in some places, they say [*area*] is rough but we have been brung *[brought]* up in *[area]* so we don't see it as rough. (male FG5 C)
>
> I feel safe where I live because you know everybody, even like the people who are like druggies and that you know them and I feel safe in *[area]* anyway. (female FG4 S)

When one respondent described her village as 'just a basic little village type thing' (female FG4 S) a classmate commented that it was full of 'smackheads' [drug addicts] (male FG4 S). There was consensus that there was a genuine drug problem in the area. Most perceptions of the areas where they lived were negative, rather than positive, though not always the case.

Physical activity and *where* respondents were physically active

Respondents described they were involved in a range of physical activities. For example, those from the design course talked about dog walking, going to the gym, having gym equipment at home and being member of a rugby club. The girls in the class perceived shopping as being a physical active. The first year sports students gave a broad range of examples of physical activities they were involved in from dog walking to playing basketball. When questioned if their friends were as physically active as them, initially they believed it was just the same, but when the topic was further discussed they decided they were more physically active than their friends:

> Well at school, they are in every single day apart from weekends, so they probably just want to relax at the weekends, so they can't be bothered to do any physical activity. (male FG2 Sp1)

On the site of the college, there was a state of the art, new gym. However participants from all three focus groups conducted at the college (design and sports students) described that gym as being was too expensive and not designed for their use.

Respondents suggested they would prefer to join a gym rather than take part in team sports; indicating a freeing of their time commitments:

> …A lot of people I think as they get older, just go to the gym instead of playing like a sport as well. (male FG3 Sp2)
>
> Aye, and you can do it anytime. You don't have to be like a commitment, if it was a club you are going to have to be there every week at a certain time. At a gym you can just go whenever you want. (male FG2 Sp1)

This research was trying to get a sense of *where* this age group was physically active. Interestingly emergent discussions arose as to how they were *limited* from being physically activity *by* their environment. Respondents talked about being forcibly removed from areas they were playing football; this included car parks or sports fields.

> We were playing up against the swimming pool and we got booted out for making too much noise. (male FG3 Sp2)
>
> We used to get kicked off the field but it was my school field and the caretaker used to kick us off all the time so we stopped playing there. Then we stopped playing. As soon as we'd finished comprehensive school we stopped playing. (male FG3 Sp2)

Across these five groups of young people there was not a common environment identifiable *where* they were physically active. Rather activity, where it occurred, was dispersed across a range of environments and settings; from organised sports to dog walking or shopping.

Parks (emergent)

Generally, parks are perceived to be environments where people are physically active; however parks also have a reputation of being locations where young people conduct under-age drinking and/ or drug taking. When asked if they go to parks or spend any time in parks:

> Not any more, I used to, the only time I go now is if I am taking my brother or something. … When you were younger you used to always hang out in the park. (male FG5 C)

Other responses to asking if they went to parks included that they were unsafe, there was a risk of getting 'knived' (male FG3 Sp1), and descriptions were given of balls being stolen (when they were younger) in the park. Overwhelming responses indicated that parks were not used for physical activity; rather they had been used as a venue for drinking alcohol when respondents were younger.

Activity in the past

There was an indication that impromptu playing sport stopped as they got older; and amongst all five groups, a sense that they had been more physically active in the past. However they had slipped away from organised physical activity due to boredom, other time commitments, and groups breaking up. Within the design students group there were individuals who had been on cross-country and athletics teams at school. For the sports students there was a suggestion that changes had come about from the transition between school and college. This change was identified by both genders and across respondents in all three settings:

> I used to be fit, but then when you come into sixth form the clubs and stuff stops so. Like if you used to play netball or stuff they don't have a team in sixth form so that just stops it. (female FG4 S)

There was also a sense that other commitments were barriers to being physically active:

> It's harder when you get older 'cos there is not as much stuff for you to do. Like you can go to the gym or something but. You have to work and stuff. (female FG4 S)

As well as the notion they were too tired after college:

> Yeh, but by the time you get home I am just too tired to go out so I just stop in, watch the telly [*TV*]. (female FG2 Sp1)

With the males in the school group there was a concept that these time commitments prevented them from kicking a ball about at school in the summer:

> There is lots of work to do for school. (male FG4 S_2)

Playing football had stopped as groups split up:

> It's the worst time because all your mates have gone off to Uni [*university*] and you got home from College and a couple of them like will still be knocking around so you go for a kick about but they've all gone to Uni now so it's just me left in my village. So everybody's at Uni in Newcastle. (male FG3 Sp2)

Accompanied by a perception that when everyone was at school together it was easier to be physically active:

> When everybody went to high school you see everyone no matter what. You always see everyone really throughout but then, when you leave, people do different stuff so there's so many of the people you don't see. Your group, as you get older, your group of friends just gets smaller and smaller. Until, obviously, when everyone gets full time jobs you wouldn't really see anyone will you? Well, I reckon anyway. (male FG3 Sp2)

For example one respondent, who had football courts near his house, which he had used regularly while at school didn't use them now as the group did not get together:

> Just because it's like, all the lads that I used to play football they don't, we don't get together any more that much to play football. (male FG3 Sp2)

One of the non-sports students presented this scenario of her activity in the past and her dislike for sport at school:

> I hated sports when I was at school. I used to skive from PE *[Physical Education]* every time we had it, I used to forge notes off me mam saying I couldn't do it. (female FG5 C)

Even within the sports students there was an overwhelming opinion that their course did not contain enough physical activity.

> In schools you have legally got the have 2 hours a week, we get 1 (female FG2 Sp1)
>
> They probably think that as it is a sports course you should do it in your own time. (male FG2 Sp1)

Cycling, as a form of activity, was brought up by the respondents. It was not an activity this age-group (16-20 years) appeared to engage in. It had been an activity of the past, when they were younger:

> I used to always when I was little, once I passed me cycle proficiency I was never off one. But then when I got to when I started secondary school I just grew out of it and just thought no body else was. (female FG2 C)

There was a clear impression that the peer group just stopped cycling:

> Nobody else was on bikes so, I never. (female FG2 C)

Safety concerns and gender

The second year sports students were all male, the first year sport had a female minority (3 out of 12) however, design and school student groups were more evenly distributed. There were some differences in their perceptions of situations or safety according to gender. Across all groups they were clear that there was a distinct difference between being male

and female in relation to how they felt on the street. Some saw it as an advantage to be female as you were less likely to be attacked:

> Some people might be criminals and all that but they still would not touch the lasses [*girls*] (male FG1 D)

While others perceived females to be more at risk:

> And it's got to be even worse for like lasses or women. Because like they're at risk of getting raped and everything. So they should be a bit brighter [*aware*]. (male FG3 Sp2)
>
> Because a bloke won't be worried about getting raped or nowt like that but the women will be. (male FG3 Sp2)
>
> ... It seems to be a lot harder for man to get jumped, like not jumped on but like took away, I think they see a woman as an easier target. (male FG5 C)

A female respondent described her need to have someone walk her home in the dark:

> See I was like in the dark I was that's why I always used to stay with people and I used to hate walking round the streets by myself. I used to always get someone to walk us home. (female FG5 C)

Male's perceived that their female peers were more cautious:

> I just don't think you'll ever find lasses who went, yes, let's walk home. (male FG3 Sp2)

Working and being physically active (emergent)

All six young people attending the school had part-time jobs. Work was seen to replace physical activity, particularly team activities like football:

> I had to give it up because of work and stuff I used to play rugby Thursday nights and Saturdays but I had to give it up to go to work. (male FG4 S_1)
>
> Well, we used to play football every night and then I got a job and then a few weeks later he got his job and so you never get any proper time arranged and everyone started getting jobs so we just gave in. (male FG4 S_2)

Female respondents also agreed with this sentiment in terms of stopping physical activity:

> There are things that stop you from doing it so you cannot do it. (female FG4 S)

Working and having money seemed preferable to spare time to have a 'kick about' (informal football):

> Because you would rather have the money from a job than kick about and stuff. (male FG4 S)

There was a difference in some of the sports students, but not all. Although some were working, they were still involved in sporting activities, particularly the older 2nd year sports students. Some were doing relevant part-time jobs like trampoline and football coaching, while others worked in department stores.

Only one respondent was unemployed and not in education in this sample (recruited via Connexions). Without finances, activities were limited:

> You have got to much time to yourself if you haven't got a job. … There is nowt to do. … Especially when you have got no money to go out anywhere. (male FG5 C)

Transport modes (emergent)

Quite a few respondents were car drivers and had their own cars. One second year sports student justified his driving behaviours:

> … I play most sport every weekend so I get my exercise through that so I don't need more exercise so I just drive everywhere… Everybody says you need to walk but I play 90 minutes on a Saturday and 90 minutes on a Sunday and coach football seven days a week so I'm entitled to drive. (male FG3 Sp2)

It emerged that members of this group had driven from one building to another to attend the focus group:

> Part of that's just so we don't have to walk and come back down though, isn't it? (male FG3 Sp2_1)
>
> Yes. Because it's closer now. (male FG3 Sp2_2)
>
> And it was cold and it was starting to rain. (male FG3 Sp2_1)
>
> And it's on a hill. (male FG3 Sp2_2)

Of the six students attending the peri-urban school; three (2 male, 1 female) had their own cars. All the others were learning to drive, apart from one who couldn't afford it. There was a sense that the car and driving freed up time but also made them less active.

> Aye I drive to the shop, the corner shop stuff like that. (male FG4 S)
>
> It's easier to walk than it is to drive but I still drive. (male FG4 S)

Despite walking being acknowledged as 'easier' the ability to drive overrode the easier and more active option:

> Just because I can. (male FG4 S)

Within the inner-city college, respondents described getting their monies worth out of metro (underground) monthly cards, to the extent that they would travel just one stop on the metro:

> I always get the Metro. I get a monthly pass so I just pay £34 a month and I can just use the Metro and bus as much as you want. So even if it's only like one stop I'll say well, I'm getting my monies worth. … Even if I had like a short journey, even like to go into town from here, I'd probably still get the Metro to Monument over Hay Market because just because I want to get my monies worth. Especially in the winter. If it was the summer I might walk in but I just want to get my monies worth. (male FG3 Sp2)

Similar to the car-drivers the metro users were keen to make use of the available transport versus walking. In all three examples, described above the respondents were travelling short walkable distances but selected sedentary forms of transport over a more physically active form. However using the metro would require them to walk from the station to the college.

Discussion

Obesity is complex, the causes are multi-factorial and include biological, psychological, behavioural and social aspects as well as well as broader environmental issues such as physical, economic, political and socio-cultural factors (37, 38). Research is needed to understand the influences that this period of transition may have on establishing long term health related behaviours (17). A recent review suggested the need to identify modifiable and specific environmental features which could be open to intervention (22); this research which aimed to understand the environment and how young persons' interact with their environment is an important step in this process.

Main findings of this study

This paper has shown that this heterogeneous group did *not* have a common environment identifiable *where* they were physically active; activity, when present, was dispersed across a range of environments and settings. Similarly barriers for activity were different across groups but included the limitations that part time work has on their time and therefore their physical activity, the external limitations imposed on young people in terms of their impromptu use of the environment for physical activity. The respondents were aware of the impact of their recent life transitions on reducing their physical activity levels. Clear enablers to increase physical activity did not emerge from the data. Other themes included attitudes towards car use in terms of its novelty and driving short distances, perceptions of the environment (e.g. parks) and the economic consciousness of the group. These focus groups were the second step in a programme of work to explore the obesogenic environment of this age-group.

What is already known on this topic

Despite there being convincing evidence of the health benefits of physical activity, many of the young people described a drop in their participation in physical activity (both formal and informal). Previous qualitative research has indicated times of transition within the life-course (i.e. movement from school to college or workplace) are critical to drop-out from physical activity (23, 39). During these transitional phases, it has been suggested that support from family and significant others is important in maintaining participation (39) as well as the importance of friends (40). Participants in this study clearly identified reasons for their reduction in certain sports and activities such as the movement from school to work, a lack of time and the lack of peer support (e.g. cycling). The current recommendations for 5 – 18 year olds for physical activity are at least 60 minutes of moderate to vigorous intensity

physical activity per day; and for adults 19 -64 years is to be active daily but up to at least 150 minutes (2½ hours) of moderate intensity activity in bouts of 10 minutes or more (41). However, there were young people who considered shopping to be a form of physical activity. Despite the acknowledged reduction in physical activity over time, individuals described being physically active in terms of shopping (females), use of weight equipment (males), gym membership, organised sport activity (sports students) and dog walking. With the lack of formalised physical education delivered in a school setting, as when they were younger, respondents needed to have some personal motivator or driver to be physically active in terms of sports clubs or gym memberships. In a US sample of undergraduate students (18-27 years), Rovniak et al (42) found respondents with greater exercise self-efficacy were significantly more likely to engage in regular exercise. A review found little evidence of sustained increases in physical activity in young adults and called for additional studies in this age group (43). Longitudinal studies have emphasised the importance of encouraging activity at a young age (21) as physical activity at the age of 9 to 18 years predicts adult physical activity (44); higher activity at a young age increases the probability of being active in adulthood.

Returning to the concept of affordances two issues in particular warrant further mention. Firstly that of the use of informal spaces, such as an empty car park for playing football, or sports pitches, that were privatised spaces. Clearly there was an unmet demand for activity spaces; other research also suggests that in the competition for public leisure space adolescents and young people often feel 'pushed out' (45). Further physical presence is no guarantee of use if there are barriers to their use for whatever reason. The fact that the young people perceived the gym at the college was 'not for their use' was as interesting as their perception that it was expensive. Opportunities for physical activity need to be accessible in every sense and this include psychologically.

Transportation, in particular car driving, used by this age group were discussed. At 17 years old, young people reach the legal age to drive and discussions within the focus group indicated how car reliant this population seemed to become. In Atlanta US, Frank et al (46) found a 6% increase in the likelihood of obesity associated with each hour spent in the car/ day. A recent systematic review reported that active travel to school (in 5-18 year olds) was associated with lower body fat in nearly half (48%) of the 23 studies examined (47). In this transitional age group, Cullen et al. (48) reported that lifestyle changes, such as decreases in

physical activity could be linked with chronic disease risks and previous research has indicated that this transition period does have an influence on chronic disease risk factors (49, 50).

Leaving school has implications for young people, becoming independent from their parents, both financially and with regard to their living environment which may include; work, further education, and possibly becoming parents (49). This was reflected within most of these discussions, where the groups were clearly aware of transitions which had taken place; or were about to take place. Many within this sample were working part time in addition to study, while one was unemployed.

There were clear distinctions between males and females regarding perceptions of safety. Previous work reported gender differences in perceptions of the environment and that women perceived neighbourhoods unsafe to walk at night (51). Safety concerns around parks were highlighted; perhaps suggesting a difference in how different age groups perceive the environment and the threats within them. When designing studies or interventions around physical activity and the environments of young people it is essential to obtain their perspectives especially around issues such as safety.

Economics and getting value for money was important them; the trade off between part time work and being physically active and getting value out of travel cards. Similarly, cars were used for short distances, rather than walking, suggesting the issue of 'active travel' was not one of great importance for this age-group where comfort (staying warm and dry) and value for money were of higher priority. Some felt their organised physical activity compensated for their reliance on their car.

Limitations of this study

While the sample size of this study is relatively small and biased with a proportion of the sample being sports students, this is the first UK study to qualitatively explore the physical activity, and perceptions of the environment in this age group. Respondents proved challenging to recruit, hence the recruitment of students studying sport and the increase in age beyond the original age-group (16-18 years). This also resulted in a gender bias with more males than females being recruited (29 versus 13). Respondents were largely a homogenous group of white English individuals with very little ethnic variation, reflective of the environments they were recruited from. Participants lived in different neighbourhoods

(urban and peri-urban); clearer assumptions and conclusions might have been drawn if the participants were all recruited from the same neighbourhood or stratified by areas with similar characteristics. The results illustrate the lack of homogeneity within this sample and age group; which is likely to be replicated across other parts of the UK. The choice of data collection method of focus groups, in this case, may have been a limitation. While most groups were manageable, focus group discussions with this age-group may have caused embarrassment or boasting about behaviours. For example discussions around alcohol were likely to be exaggerated whilst discussions around walking perhaps deemed less socially acceptable were not discussed. There were variations in the size of focus groups. Unfortunately, it was difficult to arrange focus groups for separate smaller groups of students from the same class which resulted in some large focus groups of 11 individuals. Despite wanting to gain the perspectives of a varied group of young people, it was difficult to gain access to this age-group in employment. Contact was made through apprentice schemes but it was impossible to gain access. While the original aim was to recruit 16 -18 year olds a number of older participants were recruited. Future work should include a combination of both perceptions and objective measures of the environment. The focus groups described the respondent's activity, however the use of objective measurements such as accelerometers would give a more complete picture of physical activity levels and sedentary behaviour added with Global Positioning Systems (GPS) which would give objective context to the work.

What this study adds

The broader implications for physical activity interventions from this study include the insight offered by these respondents in terms of their balancing between the need to earn money or study versus being physically active, their perceptions of the environment, the cessation of informal activity patterns (such as football). In relation to the built environment there was evidence that respondents were constrained by their perceived, physical and cultural environment; in terms of the physical and psychological accessibility of areas (e.g. being prevented from playing sports in certain locations), their perceptions of the safety of areas at certain times,; or for example perceiving driving from one building to another on a college site was acceptable, while riding a bike was not.

Credibility is an overriding goal of qualitative research and this research reflects the experience of participants within their context in a believable way (52) through the use of investigator triangulation. This study supports research that asserts individual behaviours

are influenced by physical, social, cultural and economic factors. It contributes to a gap in existing knowledge, by specifically exploring the built environment of 16-20 year olds and it demonstrates the complex relationship between place, the built environment and physical activity in this age-critical group. It suggests deficiencies in the way we have planned our neighbourhoods in relation to this group and a requirement for more investment in facilities which meet their needs. In short we need to support individuals to take control of their own lives at an age that will benefit their subsequent life course. At a time of reduced investment in youth services and increased emphasis on laisez-faire planning, this finding is unlikely to be welcome in the current political climate.

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Conflicts of Interest

The authors declare no conflict of interest.

Tables

Table I

Focus group	**Description**	**Focus group size**	**Male**	**Female**	**Age (years)**
FG1 D	College design students	11	5	6	16-18
FG2 Sp1	*College sports students year 1	12	9	3	16-19
FG3 Sp2	*College Sports students year 2	11	11	0	16 – 20
FG4 S	School students	6	3	3	17-18
FG5 C	Connexions	2	1	1	16-17
TOTAL			29	13	16-20

*In both these groups two focus groups were held as class times were too short.

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